A NEW SPECIES OF *COIX* L. (POACEAE) FROM AUSTRALIA

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Summary

***Coix gasteenii* sp. nov., from northern Queensland, is diagnosed and compared with other known species of *Coix*.**

Coix gasteenii B. Simon **species nova** affinis *C. lacryma-jobo* L. sed utriculis inflorescentiarum feminearum laminis et culmis rhizomatosis differt et affinis *C. ouwehandio* Koord. sed laminis utriculorum inflorescentiarum feminearum longioribus differt. **Typus**: Queensland. COOK DISTRICT, Lakefield National Park, 15°18′S, 144°36′E, Cabbage Tree Creek – 19 km E of Old Laura on road to Cooktown, small branch of main channel *ca* 100 m upstream from road crossing, 13 May 1987, *J.R. Clarkson* 7215 & *B.K. Simon* (holo: BRI(AQ422941 – 3 sheets BRI 422940, BRI 422941 and BRI 422942) iso: DNA,K,L,MBA,MEL,MO, NSW,PERTH,PRE,QRS,SP,US). **Figs 1–3.**

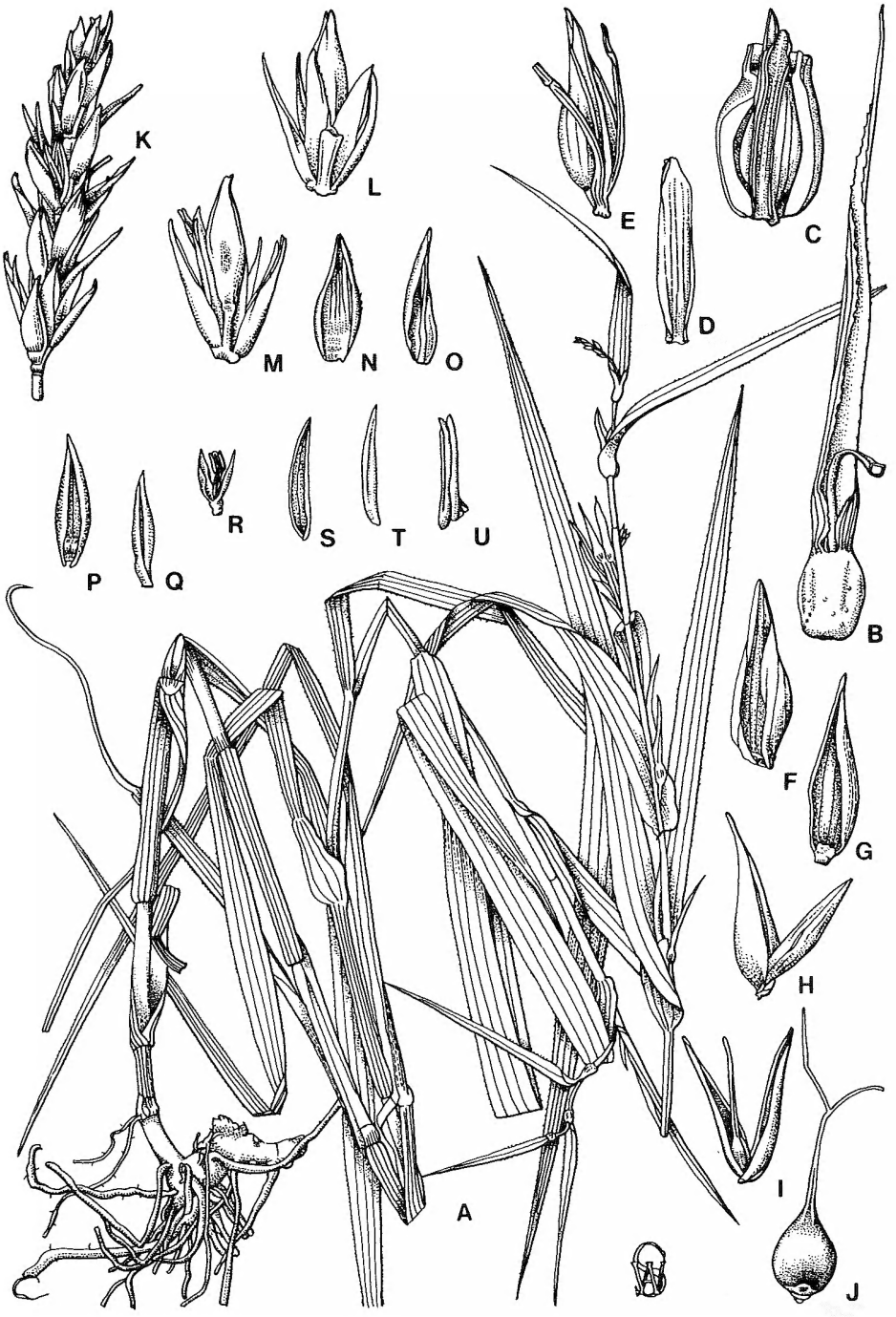
Additional specimen: Queensland. COOK DISTRICT: Lakefield – east of Cabbage Tree Creek, May 1980, *Gasteen* 50 (BRI).

This new grass was first brought to my attention in 1980 when an apical portion of the plant was sent to the Queensland Herbarium for identification as part of a plant collection made by Mr W.G.(Jim) Gasteen, during field work prior to the gazetting of the area as the Lakefield National Park. At the time the fragmentary nature of the material at hand revealed that it was different from *C. lacryma-jobi*, the only species known to occur in Australia at the time, but the material was inadequate to use as a basis for drawing up a description. Correspondence with Mr Gasteen established the exact locality of the collection and John Clarkson and I were able to collect complete material in May 1987. The new species is named after its first collector, a keen amateur naturalist, who has conducted a number of vegetation surveys for the Queensland National Parks and Wildlife Service, within the Department of Environment and Conservation.

Gasteen's original collection gave the impression that the male and female inflorescences arose independently in the upper leaf axils. However examination of the type material showed that their morphological arrangement is the same as that in *C. lacryma-jobi*, which itself can be quite variable (Jacques-Felix 1961). It was noticed that the male inflorescence may be produced at the apex of only one female involucre (utricle) or a short chain of them. With this knowledge the Gasteen fragment was further examined and it was discovered that the male racemes did arise from the apex of very immature involucres which were affected by fungal damage.

A unique feature of *C. gasteenii*, when compared with *C. lacryma-jobi*, is the extension of the utricle into small leaf blades. These are much smaller than the culm leaf blades but have the same general shape and tuberculate margins. Morphologically the utricle has been thought to be a metamorphosed leaf sheath and confirmation of this is readily shown in *C. gasteenii*. This feature is developed to a much lesser extent in some other species e.g. *C. ouwehandii* Koord. (Koorders 1919) or else is of abnormal occurrence in others e.g. *C. aquatica* Roxb. (Jain & Banerjee 1974). Another striking morphological character of *C. gasteenii* when comparing it with *C. lacryma-jobi* is the rhizomatous base of the culm. Whether this occurs in other species is not certain as either the character is not mentioned in species descriptions or adequate material of species other than *C. gasteenii* and *C. lacryma-jobi* was not available for examination.

The morphological differences between *C. gasteenii* and *C. lacryma-jobi* may be seen from the following descriptions of the two species generated by the DELTA system (Dallwitz & Paine 1986).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C. gasteenii

Habit perennial; rhizomatous; 100–180 cm tall. Leaf blades 9–150 cm long, 10–23 mm wide; with distinct forwardly pointing tubercles. Ligule 0.3 mm long. Utricles (female involucres) 2 or 3 per inflorescence; continued apically into small leaf blade; 5–7 mm long, 4–5 mm wide. Lower glume 7–9 mm long. Upper glume 8–10 mm long. Lower lemma 8–9 mm long. Palea present (6–7 mm long). Upper lemma 7–8 mm long. Palea 7–8 mm long. Caryopsis 4–5 mm long, 3–4 mm wide. Male racemes 1.4–1.8 cm long; 3–5-jointed. Lower glume 6–7 mm long; 9-nerved. Upper glume 6–7 mm long; 9–11-nerved. Lower lemma 6–7 mm long. Palea 5–6 mm long. Upper lemma 5–6 mm long. Palea 5–6 mm long.

C. lacryma-jobi

Habit annual; not rhizomatous; 90–250 cm tall. Leaf blades to 50 cm long, 2–4 mm wide; minutely tuberculate. Ligule to 0.5 mm long. Utricles (female involucres) 1–3 per inflorescence; not continued apically into small leaf blade; 9–11 mm long; 7–9 mm wide. Lower glume to 9 mm long. Upper glume to 8.8 mm long. Lower lemma to 8 mm long. Palea absent. Upper lemma to 7.6 mm long. Palea to 5.4 mm long. Caryopsis 5–6 mm long, 4–5 mm wide. Male racemes 1–1.5 cm long; 3–5-jointed. Lower glume to 9 mm long; 11-nerved. Upper glume to 8 mm long; 11-nerved. Lower lemma to 8.4 mm long. Palea to 8.2 mm long. Upper lemma to 7.2 mm long. Palea to 6.8 mm long.

C. gasteenii differs from *C. ouwehandii* by its rhizomatous habit and by having longer leaf blades from the utricles. However no material of the latter species was examined and morphological details for comparison were those of Koorders (1919).

Coix is a tropical Asian grass genus with a natural distribution from India to Japan to Papua New Guinea, with the Malesian Archipelago being suggested as a centre of origin (Vallaeys 1948). It consists of five or six previously known species (Clayton & Renvoize 1986; Nirodi 1955) and *C. gasteenii*. The best known and most widely spread species is *C. lacryma-jobi*, which has been introduced throughout the tropical and warm-temperate regions of the world and has been classified into a number of varieties (Bor 1960; Mimeur 1951). The hard globose to fusoid and lustrous utricles (female involucres) of this species are coloured white to bluish and have been used for a variety of decorative purposes. Soft-shelled edible varieties have been grown in various areas of tropical Asia, Africa and America. Although comparing favourably as a food source with wheat, rice and corn, it has usually been replaced by one of these crops in regions where it has been introduced.

The other species of *Coix* have a comparatively narrow distribution. *C. gigantea* Koenig ex Roxb. and the closely related aquatic form *C. aquatica* Roxb. occur throughout the range of the genus, although the latter has not been reported from Sri Lanka (Lazarides 1980). A couple of Queensland Herbarium specimens cultivated or naturalised in Queensland under the name *C. lacryma-jobi* have the male raceme dimensions of *C. gigantea* and for this reason they are more appropriately placed there, e.g. *J.W. Junes* AQ281408 (BRI) from near Woombye and *M. Cameron* 118 (BRI) from Weipa. *C. puellarum* Balansa occurs in Indo-China, Thailand and Burma (Lazarides 1980). The two remaining species are narrow endemics, *C. ouwehandii* Koord. in Sumatra and *C. poilanei* Mimeur in Laos (Nirodi 1955); for some reason they are not mentioned by Lazarides (1980) although they are found within the geographical boundary defined by this work.

Fig. 1. *Coix gasteenii*: A. habit × 0.25. B–J. female inflorescence. B. involucre (utricle) and associated leaf blade and rachis × 2. C. L.S. of utricle showing female spikelets in situ × 3. D. portion of rachis within utricle × 3. E. sessile spikelet and two associated rudimentary pedicelled spikelets × 3. F–J. sessile spikelet all × 3. F. lower glume. G. upper glume. H. lower floret showing lemma and palea. I. upper floret showing lemma, palea and young caryopsis. J. mature caryopsis. K. male raceme × 2. L–M. opposing views of spikelet triad of one pedicelled and two sessile spikelets × 3. N–U. sessile spikelet. N–O. lower and upper glumes × 3. P–R. lower floret. P. lemma × 3. Q. palea × 3. R. lodicules and anthers × 6. S–U. upper floret. S. lemma × 3. T. palea × 3. U. anther × 6. All from holo and isotype specimens, BRI.

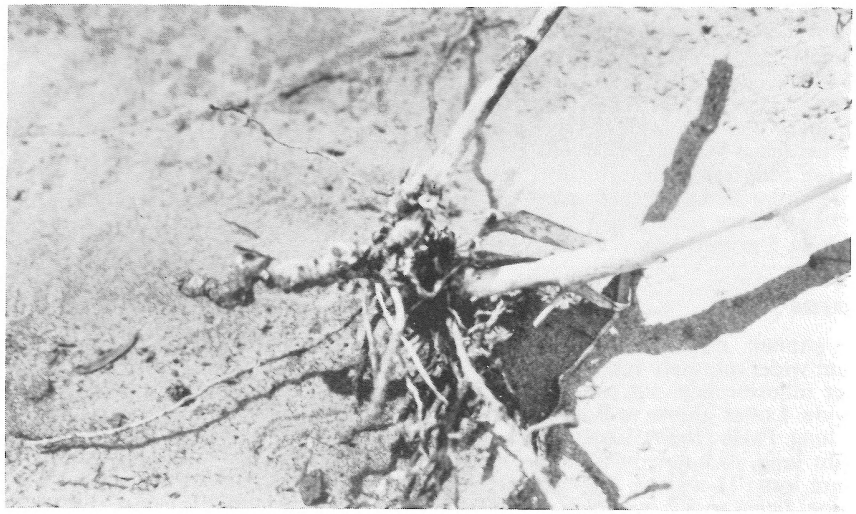

Fig. 2. *Coix gasteenii*: photograph of base of plant showing rhizome, (isotype specimen, BRI).

Fig. 3. *Coix gasteenii*: A. photograph of several utricles (female inflorescences) and one male inflorescence. B. photograph of plant in natural habitat being examined by J.R. Clarkson. Both of type gathering.

Acknowledgements

I am grateful to Jim Gasteen for detailed notes on his collecting locality, to John Clarkson, Botany Branch, Mareeba and Peter Stanton, National Parks and Wildlife Service, Cairns for assistance in finding this locality, and for permission of the Queensland National Parks and Wildlife Service to collect in a National Park.

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Accepted for publication 20 December 1988